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# United States Department of Agriculture,

BUREAU OF CHEMISTRY—Circular No. 14, Revised.

H. W. WILEY, Chief.

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## ORGANIZATION OF THE BUREAU OF CHEMISTRY.

### GENERAL STATEMENT.

For practical administration and for the economical arrangement of its work the Bureau of Chemistry is divided into divisions and laboratories according to the questions which are to be studied and the classes in which the work can be most conveniently arranged. The purpose and scope of the Bureau are best described by stating briefly the work done in each division and laboratory.

The ground covered by the investigations of the Bureau of Chemistry in past years is marked out by its publications, a list of which is included in this circular. It is the aim of the Bureau of Chemistry to confine its attention to questions of agricultural chemistry that are of public interest and to such other chemical investigations as may be referred to it by other Departments of the Government. Inquiries which are of value to individuals only, or to a small group of individuals, can not be taken up. Investigations of plans and processes which are of use only to a manufacturer requesting such investigations can not be made. On the other hand, where such investigations may result to the advantage of the public in general, and not especially to a single individual or group of individuals, such work may be undertaken.

In general, the Bureau is unable to examine miscellaneous samples sent to it for that purpose. Samples of foods, waters, soils, drugs, and other miscellaneous samples are received from time to time with a request for their analysis, but such requests are usually denied, as their number and the time the work would require make it impracticable for the Bureau to comply with them.

### DIVISION OF FOODS.

W. D. Bigelow, *Chief.*

The Division of Foods is charged with the food investigations made by the Bureau. In the past much work has been done with various kinds of food purchased in the open market, in order to determine their purity and the character of adulteration commonly practiced. Careful attention has long been given to this subject under the provisions of the appropriation act authorizing the Bureau of Chemistry to investigate the adulteration, false labeling, and false branding of food products.

At the present time the attention of the Division of Foods is chiefly occupied with researches on the effect of preservatives on nutrition, and with the enforcement of the law relating to imported foods.

Aside from the other inquiries mentioned, the Division of Foods studies analytical methods necessary for the examination of food. This work is partly done in collaboration with the Association of Official Agricultural Chemists, of which organization the Chief of Bureau is the secretary. The Division of Foods is also engaged in collaborative work with the pomologists of the Bureau of Plant Industry on the study of the ripening of fruit.

*Food inspection.*—One of the most important activities of the Bureau of Chemistry consists in the inspection of imported food products under the law which went into effect on July 1, 1903. Under the provisions of this law the Secretary of Agriculture is authorized to inspect all imported food products, including under this head what are known generally as foods, beverages, condiments, and ingredients used in the manufacture thereof. Every invoice of food products coming into this country is accompanied by a declaration made before a United States consul concerning the character of the shipment. The law requires that each package of food products shall be correctly labeled or branded in regard to the nature thereof and the place of production or manufacture. It also provides that no substance deleterious to health shall be added to any food product, and that food products which are forbidden or restricted in sale in the country where made or from which exported shall not be admitted into the United States. In the execution of this law collaboration has been established with the State and Treasury Departments. Through the State Department our consuls are instructed to secure from intending shippers a full description of the character of the goods which they propose to send, in the form of a duplicate of the invoice. To this duplicate is attached a declaration made by the shipper to the effect that the food products covered by the invoice in question do not in any way differ from the character of such products required by the inspection law. This invoice and declaration are sent by fast mail direct to the Department of Agriculture. The Treasury Department collaborates in the execution of this law by securing samples of such invoices as may be suspected of being adulterated, misbranded, or of containing a deleterious substance. Samples of these goods are secured by the agents of the Treasury at the port of entry and forwarded to the Department of Agriculture for examination. Meanwhile the goods covered by the invoice are detained or removed under bond pending the result of the examination made by the Bureau of Chemistry. If the examination shows that the food products are of such a nature as to violate the provisions of the law, the importer is notified and given an opportunity to explain the matter. If the explanation is satisfactory, the invoice is released and the goods admitted; if not, the importer is required to reship the goods covered by the invoice beyond the jurisdiction of the United States. If this is not done within ninety days from the time of notification the Secretary of the Treasury takes possession of the goods and destroys them under the provisions of a statute which has long been in force.

The result of this inspection has been most salutary. The character of the products imported into the United States has greatly improved since the law went into effect. In order to make the execution of the law more complete, branch laboratories have been established in connection with the custom-houses at six of the most important ports of entry. These laboratories are located at New York, San Francisco, Boston, Philadelphia, Chicago, and New Orleans.

## SUGAR LABORATORY.

[Under the personal supervision of Chief of Bureau.]

The sugar laboratory is charged with the chemical study of sugars and other carbohydrates. One of its duties is to examine the samples of sugar corn grown in collaboration with the agricultural experiment stations, to determine the effect of environment upon the sugar content. The chemical work relating to the domestic sirup industry—that is, the manufacture of table sirup from the maple sap, sorghum, and sugar cane—is performed in the Sugar Laboratory, which also collaborates with the International Commission for Uniform Methods of Sugar Analysis in the standardization of international quartz plates for the control of polariscopes in different countries.

## DAIRY LABORATORY.

G. E. Patrick, *Chief.*

The Dairy Laboratory examines dairy products of every description and studies methods for such examination. A large part of the work is done in cooperation with the Bureau of Animal Industry, which is charged with the enforcement of the law regulating the sale and manufacture of renovated butter (May 9, 1902).

The Dairy Laboratory examines samples of dairy products, mostly cheese, taken by the customs officers in the enforcement of the imported food law (March 3, 1903). Samples of dairy products received from other sources are examined whenever such work promises to be of public benefit. A thorough study has been made of the methods which have been proposed for distinguishing between renovated and genuine butter. The milk and butter consumed in the experiments made by the Bureau of Chemistry upon the physiological effects of preservatives and coloring matters are also analyzed in this laboratory.

The chief of the laboratory, as referee on dairy products of the Association of Official Agricultural Chemists, has conducted investigations upon the effects of preservatives on the albumen of milk and upon methods for the detection of renovated butter.

In cooperation with the Bureau of Animal Industry, there is now being made an extensive study of the digestibility of cheddar cheese ripened at different temperatures and for varying periods of time.

### MISCELLANEOUS LABORATORY.

J. K. Haywood, *Chief.*

This laboratory was formerly known as the Insecticide and Agricultural Water Laboratory, the name having been changed to the present one by special order, July 1, 1905.

The principal lines of work in this laboratory include, as heretofore, insecticides, waters, and cattle foods, with the addition of studies relating to the effect of trade wastes on forest and agricultural products and certain hygienic studies, and such other chemical work of the Bureau of Chemistry and for other bureaus and divisions of the various Departments of the Government as does not properly belong to any of the other laboratories already established.

The work on insecticides includes studies of the composition and methods of analysis of this class of compounds, together with such collaborative work with the Bureau of Entomology as may appear mutually profitable.

The work on waters includes studies, in collaboration with the Office of Experiment Stations, of irrigation waters, and of sanitary and mineral waters, and is especially concerned with the mineral waters sold upon the American market. It does not include analysis of waters for corporations, firms, or private parties, nor for any commercial purpose.

The work on cattle foods includes investigations relating to their composition, nutritive value, adulteration, and analysis.

The work on trade wastes includes studies relating to their effect on forests and agricultural products, especially the effect of smelter fumes on vegetation.

The hygienic work includes various investigations relating to public health, such as the examination of poisonous substances in articles in common use and of the atmosphere of schools, public buildings, railroad cars, etc.

The miscellaneous work includes investigations of an official and public nature which may properly be made by the Bureau of Chemistry and which are not otherwise provided for.

## DRUG LABORATORY.

Lyman F. Kebler, *Chief.*

The Drug Laboratory was organized March 1, 1903, for the purpose of investigating the adulteration of drugs, which implies the establishment of standards of purity and methods of arriving at the same, for without these it would be impossible to investigate adulteration. Where authorized standards exist, as is the case with many articles recognized in the Pharmacopœia, the medicinal remedies available on the market are examined to ascertain to what extent they comply with such standards. Simultaneous with these investigations the methods employed in arriving at the quality of medicinal agents are studied, and the data thus obtained are to be utilized in improving existing methods of analysis and in changing such existing standards as are found to be faulty or impracticable.

A careful study of the medicinal remedies included in the Pharmacopœia, but for which there are no methods of analysis or recognized standards, and of some remedies not so recognized, is now in progress for the purpose of developing methods of analysis and acquiring data upon which uniform methods and standards of composition, quality, and strength may be based.

This laboratory regularly examines the reagents supplied to and used by the Bureau of Chemistry, first, for the purpose of securing trustworthy and reliable chemicals for analytical work; second, to secure data which will serve in establishing standards, and, third, to place all contractors and competitors on an equal footing. As chairman of a committee on the testing of chemical reagents of the Association of Official Agricultural Chemists the Chief of the Drug Laboratory is collecting useful data on the quality of chemicals furnished to analytical laboratories. Special attention is given to the analytical methods used for the examination of potent plant drugs and products derived from them. As referee on medicinal plants and drugs of the above association the chief of this laboratory has undertaken systematic collaborative work with the pharmaceutical chemists of this country. The first report was on opium assaying and will be found in Bulletin No. 90 of the Bureau of Chemistry. For the second year the work on methods for opium assaying was continued, and the report may be found in Bulletin No. 99.

The laboratory also makes analyses for the Post-Office Department and assists the officials in other ways, by means of which fair and just conclusions may be reached relative to the fraudulent and dangerous nature of certain products offered and sent through the mails.

Collaborative work on the investigation of the various cod-liver oils, beeswax produced under different conditions, and the influence of certain poisonous plants on the health of bees is also in progress. Those collaborating in the work are the Division of Foods of this Bureau, the Bureau of Entomology, and the Bureau of Fisheries, Department of Commerce and Labor.

### CONTRACTS LABORATORY.

L. S. MUNSON, *Chief.*

The Contracts Laboratory was organized July 1, 1903, for the purpose of examining materials submitted with bids for contracts or furnished upon contract for the various Executive Departments, and to do collaborative work, provided for by law, with other Departments which may request such assistance from the Secretary of Agriculture.

Among the more important lines of contracts work may be mentioned the investigation and examination of postmarking and canceling inks and inking pads used by the Post-Office Department; of the lubricating oils and coals used in the Government Hospital for the Insane; of the writing inks, typewriter ribbons, carbon papers, etc., used in the various Executive Departments where permanence of records is essential; of the chemical glassware used in the Department of Agriculture; and of supplies for the Commissary Office, War Department. This laboratory, at the request of the Secretary of the Treasury, also makes the examination of a large number and variety of materials regarding which there has arisen a question of classification for dutiable purposes.

### PLANT ANALYSIS LABORATORY.

C. C. MOORE, *Chief.*

On July 1, 1904, this laboratory was established and charged with the investigation of fertilizers in respect of composition, in which work the laboratory will cooperate with the referees of the Association of Official Agricultural Chemists, studying methods of analysis of fertilizers and fertilizing substances. Miscellaneous examinations of fertilizers are not made.

The laboratory is also to investigate the constitution of plants, and is authorized to collaborate with the Bureau of Plant Industry in the chemical investigation of other problems in which the Bureau of Chemistry and the Bureau of Plant Industry are mutually interested.

### LEATHER AND PAPER LABORATORY.

F. P. VEITCH, *Chief.*

This laboratory was established on July 1, 1904, for the conduct of the following investigations:

Investigations of tannins and tanning materials and their effects upon the strength and properties of leather with a view to promoting the agricultural industries relating to the production of tannins and tanning materials and leather of a high quality.

All technical problems of a chemical nature relating to the production of tannins and tanning products.

All technical problems of a chemical nature relating to the production of leather.

All chemical and physical investigations of papers in regard to their fitness for use in the Department of Agriculture and other Departments of the Government which may request such investigations.

All technical problems of a chemical nature relating to the production of paper, with a view to promoting the agricultural industries connected with the production of the raw materials and to the improvement of the quality of papers made.

Chemical-technical problems relating to the production, utilization, and composition of turpentines, rosins, and other gums and resins, including investigations of the coagulation of rubber latex and of the composition of rubber.

Technical-chemical investigations of the destructive distillation of woods, with reference to the utilization of waste woods and the increase of the various products obtained therefrom, and also investigations of other chemical uses of woods.

## MICROCHEMICAL LABORATORY.

B. J. Howard, *Chief.*

This laboratory was organized July 1, 1904. It is charged with the microscopical and microchemical study of foods, drugs, cattle foods, paper and textile materials, miscellaneous agricultural products, etc. Special attention is given to the histological study of fruits, spices, cereals, starches, and other agricultural products, both on account of its scientific interest and for the purpose of perfecting methods for detecting the adulteration of these products. The laboratory makes microscopical examinations of the urine and blood in connection with the work of the Bureau on the influence of food preservatives on nutrition, and also performs the photomicrographic work done in the Bureau and cooperates with other branches of the Government in work of that character.

## SPECIAL INVESTIGATIONS.

From time to time various lines of investigation which do not come within the defined scope of any division or laboratory are taken up by the Bureau. Such investigations may be illustrated by the following cases:

*The influence of environment on the composition of certain agricultural products.*—In collaboration with a number of the State agricultural experiment stations, this Bureau is specially directed by Congress to study the influence of environment upon the chemical composition of wheat, barley, and the sugar and starch producing plants. The need of further study of this subject is generally recognized, and this Bureau has the active collaboration of a considerable number of the State experiment stations in its prosecution. These investigations are under the personal supervision of the Chief of Bureau.

*Enological technology.*—This work is carried on under the direction of Mr. William B. Alwood, special agent of the Bureau of Chemistry. The investigation divides naturally into two parts, one dealing with the study of alcoholic ferments and the mal-organisms associated with them in fruit musts, ciders, wines, and fruit by-products; the other with the composition of fruits and fruit juices and their fermented products and the critical examination of the residue which is left in the marc or pomace as a comparatively waste product.

In the fermentation study the pure cultures of the various organisms which occur in fruit musts or similar products are separated. These organisms are isolated and their growth activities studied as alcoholic ferments or as mal-ferments which destroy the sugar, alcohol, acids, etc., which it is desired to produce.

The pure cultures which have given the greatest promise in Europe have been studied and compared with those isolated in this country. Having thus determined the vital activities, methods of control are studied that the cultures of pure ferments may be utilized to produce the desired qualities in products manufactured from fruit juices, and to either suppress or destroy undesirable organisms.

Approved:
JAMES WILSON,
*Secretary of Agriculture.*

WASHINGTON, D. C., *March 31, 1906.*

# PUBLICATIONS OF THE BUREAU OF CHEMISTRY.

NOTE.—To obtain those publications to which a **Price is affixed,** application must be made to the **Superintendent of Documents, Government Printing Office, Washington, D. C.,** to whom all remittances must be directed. **Stamps and personal checks will not be accepted.**

**THE SUPERINTENDENT OF DOCUMENTS IS NOT AN OFFICIAL OF THE DEPARTMENT OF AGRICULTURE.**

Publications to which no price is affixed may be obtained on application to the Secretary of Agriculture, Washington, D. C. **Free publications are not distributed by the Superintendent of Documents.**

## BULLETINS.

No. 1. An Investigation of the Composition of American Wheat and Corn. By Clifford Richardson. 1873. Pp. 69. (Out of print.)

No. 2. Diffusion. Its application to Sugar Cane, and Record of Experiments with Sorghum in 1883. By H. W. Wiley. 1884. Pp. 36, pls. 2. (Out of print.)

No. 3. The Northern Sugar Industry. A Record of its Progress during the Season of 1883. By H. W. Wiley. 1884. Pp. 120, charts 11. (Out of print.)

No. 4. An Investigation of the Composition of American Wheat and Corn. (Second report.) By Clifford Richardson. 1884. Pp. 98. (Out of print.)

No. 5. The Sugar Industry of the United States. By H. W. Wiley. 1885. Pp. 224, figs. 12, pls. 12, map. (Out of print.)

No. 6. Experiments with Diffusion and Carbonation at Ottawa, Kans., Campaign of 1885. By H. W. Wiley. 1885. Pp. 20. (Out of print.)

No. 7. Methods of Analysis of Commercial Fertilizers. (Proceedings of the Association of Official Agricultural Chemists, September 1 and 2, 1885.) Edited by Charles W. Dabney. 1885. Pp. 49. (Out of print.)

No. 8. Methods and Machinery for the Application of Diffusion to the Extraction of Sugar from Sugar Cane and Sorghum, and for the use of Lime and Carbonic and Sulphuric Acids in Purifying the Diffusion Juices. By H. W. Wiley. 1886. Pp. 85, figs. 24. (Out of print.)

No. 9. Third Report on the Chemical Composition and Physical Properties of American Cereals, Wheat, Oats, Barley, and Rye. By Clifford Richardson. 1886. Pp. 82. (Out of print.)

No. 10. Principles and Methods of Soil Analysis. By Edgar Richards. 1886. Pp. 66. (Out of print.)

No. 11. Report of Experiments in the Manufacture of Sugar at Magnolia Station, Lawrence, La., Season of 1885–86. (Second report.) By Guilford L. Spencer. 1886. Pp. 26. (Out of print.)

No. 12. Methods of Analysis of Commercial Fertilizers. (Proceedings of the Third Annual Convention of the Association of Official Agricultural Chemists, August 26 and 27, 1886.) 1886. Pp. 59. (Out of print.)

No. 13. Foods and Food Adulterants—

- Part First: Dairy Products. By H. W. Wiley. 1887. Pp. 132, pls. 12, figs. 4. (Out of print.)
- Part Second: Spices and Condiments. By Clifford Richardson. 1887. Pp. 130, pls. 16. (Out of print.)
- Part Third: Fermented Alcoholic Beverages, Malt Liquors, Wine, and Cider. By C. A. Crampton. 1887. Pp. 140. (Out of print.)
- Part Fourth: Lard and Lard Adulterations. By H. W. Wiley. 1889. Pp. 154, figs. 7, pls. 10. (Out of print.)
- Part Fifth: Baking Powders. By C. A. Crampton. 1889. Pp. 73. (Out of print.)
- Part Sixth: Sugar, Molasses, and Sirup, Confections, Honey, and Beeswax. 1892. Pp. 225. (Out of print.)
- Part Seventh: Tea, Coffee, and Cocoa Preparations. By Guilford L. Spencer. 1892. Pp. 147, pls. 8. (Out of print.)
- Part Eighth: Canned Vegetables. By K. P. McElroy. 1893. Pp. 64. (Out of print.)
- Part Ninth: Cereals and Cereal Products. By H. W. Wiley. 1898. Pp. 206, pls. 8, figs. 4. Price 15 cents.
- Part Tenth: Preserved Meats. By W. D. Bigelow. 1902. Pp. 152, figs. 3. Price 10 cents.

No. 14. Record of Experiments at Fort Scott, Kans., in the Manufacture of Sugar from Sorghum and Sugar Canes, in 1886. By H. W. Wiley. 1887. Pp. 64. (Out of print.)

No. 15. Reports of Experiments in the Manufacture of Sugar at Magnolia Station, Lawrence, La., Season of 1886–87. (Third report.) By Guilford L. Spencer. 1887. Pp. 35. (Out of print.)

No. 16. Methods of Analysis of Commercial Fertilizers, Feeding Stuffs, and Dairy Products. Adopted at the Fourth Annual Convention of the Association of Official Agricultural Chemists, August 16, 17, and 18, 1887. Edited by Clifford Richardson. 1887. Pp. 80, figs. 4. (Out of print.)

No. 17. Record of Experiments Conducted by the Commissioner of Agriculture in the Manufacture of Sugar from Sorghum and Sugar Canes at Fort Scott, Kans., Rio Grande, N. J., and Lawrence, La., 1887–88. Pp. 118, figs. 5. (Out of print.)

No. 18. Sugar-Producing Plants. Record of Analyses made by authority of the Commissioner of Agriculture under direction of the Chemist, 1887–88 (Sorghum—Fort Scott, Kans., Rio Grande, N. J.; Sugar Cane—Lawrence, La.), together with a study of the data collected on sorghum and sugar cane. 1888. Pp 132. (Out of print.)

No. 19. Methods of Analysis of Commercial Fertilizers, Cattle Foods, Dairy Products, Sugar, and Fermented Liquors. Adopted at the Fifth Annual Convention of the Association of Official Agricultural Chemists, held at the U. S. Department of Agriculture, August 9 and 10, 1888. Edited by Clifford Richardson. 1888. Pp. 96. (Out of print.)

No. 20. Record of Experiments Conducted by the Commissioner of Agriculture in the Manufacture of Sugar from Sorghum at Rio Grande, N. J., Kenner, La., Conway Springs, Douglass, and Sterling, Kans., 1888. By H. W. Wiley. 1889. Pp. 162. (Out of print.)

No. 21. Report of Experiments in the Manufacture of Sugar by Diffusion at Magnolia Station, Lawrence, La. Season of 1888–89. By Guilford L. Spencer. 1888. Pp. 162. (Out of print.)

No. 22. Record of Experiments at Des Lignes Sugar Experiment Station, Baldwin, La., during the season of 1888. By C. A. Crampton. 1889. Pp. 36. (Out of print.)

No. 23. Record of Experiments at the Sugar Experiment Station on Calumet Plantation, Pattersonville, La. By Hubert Edson. 1889. Pp. 42. (Out of print.)

No. 24. Proceedings of the Sixth Annual Convention of the Association of Official Agricultural Chemists, held at the U. S. Department of Agriculture, September 10, 11, and 12, 1889. Edited by H. W. Wiley. 1890. Pp. 235. (Out of print.)

No. 25. A Popular Treatise on the Extent and Character of Food Adulterations. By A. J. Wedderburn. 1890. Pp. 61. (Out of print.)

No. 26. Record of Experiments in the Production of Sugar from Sorghum in 1879 at Cedar Falls, Iowa, Rio Grande, N. J., Morrisville, Va., Kenner, La., College Station, Md., and Conway Springs, Attica, Medicine Lodge, Ness City, Liberal, Arkalon, Meade, Minneola, and Sterling, Kans. By H. W. Wiley. Pp. 112. 1890. (Out of print.)

No. 27. The Sugar-Beet Industry: Culture of the Sugar-Beet and Manufacture of Beet Sugar. By H. W. Wiley. 1890. Pp. 262. (Out of print.)

No. 28. Proceedings of the Seventh Annual Convention of the Association of Official Agricultural Chemists, held at the U. S. National Museum, August 28, 29, and 30, 1890. (Methods of Analysis of Commercial Fertilizers, Foods, and Feeding Stuffs, Dairy Products, Fermented Liquors, and Sugars.) Edited by H. W. Wiley. 1890. Pp. 238. (Out of print.)

No. 29. Record of Experiments with Sorghum in 1890. By H. W. Wiley. 1891. Pp. 125. Price 10 cents.

No. 30. Experiments with Sugar Beets in 1890. By H. W. Wiley. 1891. Pp. 93. (Out of print.)

No. 31. Proceedings of the Eighth Annual Convention of the Association of Official Agricultural Chemists, held at Columbian University, Washington, D. C., August 13, 14, and 15, 1891. Edited by H. W. Wiley. 1891. Pp. 253. (Out of print.)

No. 32. Special Report on the Extent and Character of Food Adulterations, including State and Other Laws Relating to Foods and Beverages. By A. J. Wedderburn. 1892. Pp. 174. (Out of print.)

No. 33. Experiments with Sugar Beets in 1891. By H. W. Wiley. 1892. Pp. 158. (Out of print.)

No. 34. Experiments with Sorghum in 1891. By H. W. Wiley. 1892. Pp. 132. (Out of print.)

No. 35. Proceedings of the Ninth Annual Convention of the Association of Official Agricultural Chemists, held at the U. S. National Museum, Washington, D. C., August 25, 26, and 27, 1892. Edited by H. W. Wiley. 1892. Pp. 243+xvii. (Out of print.)

No. 36. Experiments with Sugar Beets in 1892. By H. W. Wiley. 1893. Pp. 74. (Out of print.)

No. 37. Record of Experiments with Sorghum in 1892. By H. W. Wiley. 1893. Pp. 100. (Out of print.)

No. 38. Proceedings of the Tenth Annual Convention of the Association of Official Agricultural Chemists, held at Chicago, Ill., August 24, 25, and 26, 1893. Edited by H. W. Wiley. 1893. Pp. 218+xvi. (Out of print.)

No. 39. Experiments with Sugar Beets in 1893. By H. W. Wiley, with the collaboration of Walter Maxwell. 1894. Pp. 59. Price 5 cents.

No. 40. Record of Experiments with Sorghum. 1893. By H. W. Wiley, with the collaboration of Messrs. Oma Carr and C. I. Hinman. 1894. Pp. 38. (Out of print.)

No. 41. Report on the Extent and Character of Food Adulteration. By A. J. Wedderburn. 1894. Pp. 64. (Out of print.)

No. 42. Compilation of the Pharmacy and Drug Laws of the Several States and Territories. By A. J. Wedderburn. 1894. Pp. 152. (Out of print.)

No. 43. Proceedings of the Eleventh Annual Convention of Official Agricultural Chemists, held at Washington, D. C., August 23, 24, and 25, 1894. Edited by H. W. Wiley. 1894. Pp. 403. (Out of print.)

No. 44. Sweet Cassava: Its Culture, Properties, and Uses. By H. W. Wiley. 1894. Pp. 16, pls. 2. (Out of print.)

No. 45. Analyses of Cereals Collected at the World's Columbian Exposition and Comparisons with other Data. By H. W. Wiley. 1895. Pp. 57. (Out of print.)

No. 46. Methods of Analysis Adopted by the Association of Official Agricultural Chemists, September 5, 6, and 7, 1895. Edited by H. W. Wiley, with the collaboration of L. L. Van Slyke and W. D. Bigelow. 1895. Pp. 84, figs. 4. (Out of print.)

No. 46, revised. 1899. Pp. 86, figs. 4. Price 5 cents.

No. 47. Proceedings of the Twelfth Annual Convention of the Association of Official Agricultural Chemists, held at Washington, D. C., September 5, 6, and 7, 1895. Edited by H. W. Wiley. 1896. Pp. 172, figs. 2. (Out of print.)

No. 48. Zinc in Evaporated Apples. By H. W. Wiley. 1896. Pp. 38. Price, 5 cents.

No. 49. Proceedings of the Thirteenth Annual Convention of Official Agricultural Chemists, held at Washington, D. C., November 6, 7, and 9, 1896. Edited by H. W. Wiley. 1897. Pp. 127. (Out of print.)

No. 50. Composition of Maize (Indian Corn), including the Grain, Meal, Stalks, Pith, Fodder, and Cobs. Compiled by H. W. Wiley. 1898. Pp. 31. Price 5 cents.

No. 51. Proceedings of the Fourteenth Annual Convention of the Association of Official Agricultural Chemists, held at Washington, D. C., October 26, 27, and 28, 1897. Edited by H. W. Wiley. 1898. Pp. 169. Price, 10 cents.

No. 52. Experiments with Sugar Beets in 1897. By H. W. Wiley. 1888. Pp. 165, maps 2. Price, 20 cents.

No. 53. Chemical Composition of the Carcasses of Pigs. By H. W. Wiley (and others). 1898. Pp. 80. Price 5 cents.

No. 54. Report on an Investigation of Analytical Methods for Distinguishing between the Nitrogen of Proteids and that of the Simpler Amids or Amido-acids. By J. W. Mallet, Professor of Chemistry, University of Virginia. With a Chapter on the Separation of Flesh Bases from Proteid Matters by Means of Bromin. By H. W. Wiley, Chief of Division of Chemistry. 1898. Pp. 30. (Out of print.)

No. 55. Fertilizing Value of Street Sweepings. By E. E. Ewell. 1898. Pp. 19. Price 5 cents.

No. 56. Proceedings of the Fifteenth Annual Convention of the Association of Official Agricultural Chemists, held at Washington, D. C., November 11, 12, and 14, 1898. Edited by H. W. Wiley. 1899. Pp. 140. Price 10 cents.

No. 57. Proceedings of the Sixteenth Annual Convention of the Association of Official Agricultural Chemists, held at San Francisco, July 5, 6, and 7, 1899. Edited by H. W. Wiley. 1899. Pp. 130. Price 10 cents.

No. 58. The Manufacture of Starch from Potatoes and Cassava. By H. W. Wiley. 1900. Pp. 48, pls. 8. Price 10 cents.

No. 59. The Composition of American Wines. By W. D. Bigelow. 1900. Pp. 76. Price 5 cents.

No. 60. The Sunflower Plant: Its Cultivation, Composition, and Uses. By H. W. Wiley. 1901. Pp. 31, pl. 1, figs. 2. Price 5 cents.

No. 61. Pure Food Laws of European Countries Affecting American Exports. By W. D. Bigelow. 1901. Pp. 39. Price 5 cents.

No. 62. Proceedings of the Seventeenth Annual Convention of the Association of Official Agricultural Chemists, held at Washington, D. C., November 16, 17, and 19, 1900. Edited by H. W. Wiley. 1901. Pp. 163, pl. 1. Price 10 cents.

No. 63. Exhibit of the Bureau of Chemistry at the Pan-American Exposition, Buffalo, New York. 1901. Prepared under the direction of Harvey W. Wiley, Chief, Bureau of Chemistry, by E. E. Ewell, W. D. Bigelow, and Logan Waller Page. Pp. 29, pls. 4. Price 5 cents.

No. 64. The Influence of Environment upon the Composition of the Sugar Beet, 1900. By Harvey W. Wiley. 1901. Pp. 32, charts 3. Price 5 cents.

No. 65. Provisional Methods for the Analysis of Foods. Adopted by the Association of Official Agricultural Chemists, November 14, 15, and 16, 1901. Edited by H. W. Wiley. 1902. Pp. 169, figs. 7. Price 10 cents.

No. 66. Fruits and Fruit Products: Chemical and Microscopical Examination. Prepared under the direction of W. D. Bigelow, by L. S. Munson, L. M. Tolman, and Burton J. Howard 1902. Revised, 1905. Pp. 114, pls. 12. Price 20 cents.

No. 67. Proceedings of the Eighteenth Annual Convention of the Association of Official Agricultural Chemists, held at Washington, D. C., November 14, 15, and 16, 1901. Edited by H. W. Wiley. 1902. Pp. 184, frontispiece. Price 10 cents.

No. 68. The Chemical Composition of Insecticides and Fungicides, with an Account of the Methods of Analysis Employed By J. K. Haywood in cooperation with the Division of Entomology. 1902. Pp. 62, fig. 1. Price 5 cents.

No. 69. Foods and Food Control. By W. D. Bigelow. 1902. Parts I–VI. (Out of print.)

No. 69, revised to July 1, 1905. Foods and Food Control. By W. D. Bigelow. 1905-1906.

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## CIRCULARS.

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No. 19, revised. Methods for the Detection of Renovated Butter. (Cooperative work, Association of Official Agricultural Chemists, 1905.) By G. E. Patrick, Referee on Dairy Products and Chief of Dairy Laboratory. 1905. Pp. 6.

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## FOOD INSPECTION DECISIONS.

F. I. D. 1–25. By H. W. Wiley, Chief of Bureau. June 1, 1905. Pp. 28.
F. I. D. 26. By H. W. Wiley, Chief of Bureau. June 22, 1905. Pp. 3.
F. I. D. 27–30. By H. W. Wiley, Chief of Bureau. September 29, 1905. Pp. 4.
F. I. D. 31. By H. W. Wiley, Chief of Bureau. October 14, 1905. P. 1.
F. I. D. 32. By H. W. Wiley, Chief of Bureau. October 30, 1905. Pp. 2.
F. I. D. 33–36. By H. W. Wiley, Chief of Bureau. January 18, 1906. Pp. 4.
F. I. D. 37–38. By H. W. Wiley, Chief of Bureau. March 28, 1906. Pp. 2.

## FARMERS' BULLETINS.

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No. 52, revised. 1899.

No. 52, second revised edition. By G. L. Spencer. 1901.

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Inspection of Foreign Food Products. By H. W. Wiley. From Yearbook for 1904. Pp. 151–160.

## REPRINTS FROM BULLETINS.

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Summary of Experiments on the Relation of Soil Acidity to Fertility. By F. P. Veitch. From Bul. No. 90. Pp. 183–187.

## REPORTS OF SUGAR-BEET INVESTIGATIONS.

Experiments with Sugar Beets in 1898. By H. W. Wiley. Published as a part of "Progress of the Beet-Sugar Industry in the United States in 1898." Pp. 131–155.

Experiments with Sugar Beets in 1899. By H. W. Wiley. Published as a part of "Progress of the Beet-Sugar Industry in the United States in 1899." Pp. 135–193.

Experiments with Sugar Beets in 1900. By H. W. Wiley. Published as a part of "Progress of the Beet-Sugar Industry in the United States in 1900." Pp. 123–171.

Analysis of the Sugar Beets Grown in Various States. By H. W. Wiley. Published as a part of "Special Report on the Beet-Sugar Industry in the United States." 1900. Pp. 135–141.

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